

App. No. 09/837,102  
Office Action Dated December 21, 2004

**Amendment to the Claims:**

This listing of claims will replace all prior version and listing of claims in the application.

Claims 2 and 3 are amended

**Listing of Claims:**

1. (Canceled)
2. (Currently Amended) A filter cartridge which is prepared by winding a non-woven fabric strip comprising a thermoplastic fiber around a perforated cylinder in a twill form, said thermoplastic fiber being direction aligned along a machine direction, wherein the non-woven fabric strip satisfies the following equation (B):
$$\log_{10} Y < 3.75 - 0.75 (\log_{10} X) \quad (B)$$
wherein X (cm<sup>3</sup>/cm<sup>2</sup>/sec) is an airflow amount of the non-woven fabric strip measured in accordance with JIS L 1096-A (1990), and Y (g/m<sup>2</sup>) is a basis weight thereof; and  
wherein the direction aligned fiber non-woven fabric is produced by a spun bonding method.
3. (Currently Amended) A filter cartridge which is prepared by winding a non-woven fabric strip comprising a thermoplastic fiber around a perforated cylinder in a twill form, said thermoplastic fiber being direction aligned along a machine direction, wherein:  
in winding in the twill form, a number (W) of winding the non-woven fabric strip from one end to another end in a longitudinal direction of the perforated cylinder is one to 10 per a length of 250 mm in the perforated cylinder;  
when a 2-fold value (2W) of the winding number (W) is represented by a fraction having a denominator of two figures or less which is a non-reducible approximate value, the denominator is 4 to 40; and  
the direction aligned non-woven fabric is produced by a spun bonding method.
4. (Canceled)
5. (Previously Presented) The filter cartridge as claimed in claim 2, wherein at least a part

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of fiber intersections of the non-woven fabric strip is thermally bonded.

6. (Previously Presented) The filter cartridge as claimed in claim 2, wherein the non-woven fabric strip has a width of 0.5 to 40 cm.

7. (Previously Presented) The filter cartridge as claimed in claim 2, wherein a product of a width (cm) and a basis weight ( $\text{g/m}^2$ ) of the non-woven fabric strip is 10 to 200.

8. (Previously Presented) The filter cartridge as claimed in claim 2, wherein the non-woven fabric strip has a thickness of 0.02 to 1.20 mm.

9. (Previously Presented) The filter cartridge as claimed in claim 2, wherein the non-woven fabric strip is thermal compression bonded by means of a heat embossing roll having an embossing area rate of 5 to 25%.

10. (Previously Presented) The filter cartridge as claimed in claim -1- 2, wherein the filter material of the filter cartridge has a void rate of 65 to 85%.

11-13 (Canceled)

14. (Previously Presented) The filter cartridge as claimed in claim 2, wherein the thermoplastic fiber is a composite fiber comprising a low melting resin and a high melting resin, a difference of the melting points between these resins being  $10^\circ\text{C}$  or more.

15. (Previously Presented) The filter cartridge as claimed in claim 2, wherein the thermoplastic fiber is a fiber formed from at least one thermoplastic resin selected from the group consisting of a polyester resin, a polyamide resin, a polyethylene resin and a polypropylene resin.

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16. (Withdrawn) A process for producing a filter cartridge, which comprises winding a non-woven fabric strip comprising a thermoplastic fiber around a perforated cylinder in a twill form, wherein the non-woven fabric strip satisfies the following equation (A):

$$\log_{10} Y < 3.75 - 0.6 (\log_{10} X) \quad (A)$$

wherein  $X$  ( $\text{cm}^3/\text{cm}^2/\text{sec}$ ) is an airflow amount of the non-woven fabric strip measured in accordance with JIS L 1096-A (1990), and  $Y$  ( $\text{g}/\text{m}^2$ ), and  $Y$  ( $\text{g}/\text{m}^2$ ) is a basis weight thereof.

17. (Withdrawn) A process for producing a filter cartridge, which comprises winding a non-woven fabric strip comprising a thermoplastic fiber around a perforated cylinder in a twill form, wherein in winding in a twill form, a number (W) of winding the non-woven fabric strip from one end to the other end in a longitudinal direction of the perforated cylinder is one to 10 per a length of 250 mm in the perforated cylinder.

18 (Canceled)

19. (Previously Presented) The filter cartridge as claimed in claim 3, wherein at least a part of fiber intersections of the non-woven fabric strip is thermally bonded.

20. (Previously Presented) The filter cartridge as claimed in claim 3, wherein the non-woven fabric strip has a width of 0.5 to 40 cm.

21. (Previously Presented) The filter cartridge as claimed in claim 3, wherein a product of a width (cm) and a basis weight ( $\text{g}/\text{m}^2$ ) of the non-woven fabric strip is 10 to 200.

22. (Previously Presented) The filter cartridge as claimed in claim 3, wherein the non-woven fabric strip has a thickness of 0.02 to 1.20 mm.

23. (Previously Presented) The filter cartridge as claimed in claim 3, wherein the non-woven fabric strip is thermal compression bonded by means of a heat embossing roll having an embossing area rate of 5 to 25%.

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24. (Previously Presented) The filter cartridge as claimed in claim 3, wherein the filter material of the filter cartridge has a void rate of 65 to 85%.

25 (Canceled)

26. (Previously Presented) The filter cartridge as claimed in claim 3, wherein the thermoplastic fiber is a composite fiber comprising a low melting resin and a high melting resin, a difference of the melting points between these resins being 10°C or more.

27. (Previously Presented) The filter cartridge as claimed in claim 3, wherein the thermoplastic fiber is a fiber formed from at least one thermoplastic resin selected from the group consisting of a polyester resin, a polyamide resin, a polyethylene resin and a polypropylene resin.

28. (Canceled)